

Improvement of eggless cake structure using ultrasonically treated whey protein

ABSTRACT

Ultrasound treatment was applied on whey protein concentrate suspension prior to foaming and being mixed into batter for eggless cake baking. The improvement of batter and baked cake made using ultrasound treated whey protein were measured in terms of aeration, rheological and textural properties. Baked cakes formulated with untreated whey protein suspension at varying concentrations between 10 and 20 % were compared with ultrasound treated whey protein up to 25 min at 60 % amplitude. Visualized images of aerated cake products using x-ray tomography technique supported the findings of improved batter in terms of density decrease by 5 %, and viscosity, consistency index, storage modulus, and loss modulus increase by 31, 57, 33, and 21 %, respectively. For baked cakes, volume increase was 18 %, and density, hardness, and chewiness decrease was 18, 65, and 64 %, respectively, when compared to those made using untreated whey protein. Image analysis presented a higher number of smaller gas cells in the aerated baked cakes structure using ultrasound treated whey protein.

Keyword: Batter; Egg white protein; Eggless cake; Ultrasound; Whey protein; X-ray tomography